

WHAT IS CLAIMED IS:

1. A metrology instrument for measuring and inspecting deviations between a pair of elements of a pattern to be stitched within an image, said metrology instrument comprising:

a means for obtaining an image pattern for inspection, said image pattern having a stitching part at which a pair of elements of said image pattern are stitched to each other along a straight boundary line extending along said stitching part;

a  $\Delta X$ -measuring device for measuring deviation  $\Delta X$  between stitched elements of said image pattern along said straight boundary line;

a storing means for storing two sets of data about images indicating dose distributions in memory, said dose distributions being calculated by a simulation method under the condition that an energetic beam is used when said elements of said pattern are transferred;

an image superimposing means for shifting one of the images indicating the dose distributions by said  $\Delta X$  along said straight boundary line and by a desired amount  $\Delta Y$  in a direction vertical to said straight boundary line relatively to the other and superimposing both of said images indicating the dose distributions; and

an image comparator for taking the correlation between image data obtained for said inspection and image data produced by the superimposing by comparing these two kinds of image data.

2. The metrology instrument of claim 1, wherein there are further provided a decision device for making a decision based on said correlation as to whether said  $\Delta Y$  should be updated and a  $\Delta Y$ -setting device for resetting  $\Delta Y$  if said  $\Delta Y$  is updated, and wherein said  $\Delta Y$  is updated until said correlation becomes less than a given value.

3. The metrology instrument of claim 1, further comprising a  $\Delta Y$ -setting device for updating the value of  $\Delta Y$  a set number of times and a decision device for detecting the value of  $\Delta Y$  that minimizes said correlation.

4. The metrology instrument of any one of claims 1-3, wherein image data about dose distributions of plural pattern shapes are stored in memory.

